FISH SURVEYS
ON THE KEMMERER RANGER DISTRICT,
BRIDGER-TETON NATIONAL FOREST

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INTRODUCTION

In a joint effort between the Caribou, Bridger-Teton, Uinta & Wasatch-Cache National Forests, Region 4 of the U.S.D.A. Forest Service, the states of Wyoming, Idaho and Utah and the Bureau of Land Management, surveys were conducted throughout many of the tributaries of the Bear River Drainage. The main purpose for conducting these surveys was to identify the location of existing populations of cutthroat trout and their most upstream limits. A secondary purpose was to collect tissue samples to determine genetic purity of the cutthroat trout. Other information which was hoped could be acquired was a population estimate for fish within the stream and age class distribution of the population.

The streams sampled (Table 1, Figure 1) on the Bridger-Teton National Forest were selected by the Kemmerer Ranger District staff and forwarded to me. Working with a Forest Service seasonal crew, Wyoming Game and Fish Department and staff of the Kemmerer Ranger District, the streams were sampled to determine species composition, fin clips were taken and where possible a population estimate was made.

Table 1. Streams surveyed for fish on the Bridger-Teton National Forest in 1995 and township (T), range (R) and section (Sec) where the samples were taken.

Stream	Tributary of	Sampling location
Giraffe Creek trib.	Salt Creek	T29N, R119W, Sec20
Packstring Creek	Salt Creek	T29N, R119W, Sec22-27
Little White Creek	Salt Creek	T29N, R119W, Sec11
Water Canyon Creek	Salt Creek	T29N, R118W, Sec28
Porcupine Creek	Smith Fork	T28N, R118W, Sec12
Trespass Creek	Smith Fork	T28N, R118W, Sec10
Lander Creek	Smith Fork	T29N, R117W, Sec30
N. F. Lander Creek	Smith Fork	T29N, R117W, Sec19
N. F. Smith Fork	Smith Fork	T29N, R117W, Sec7

METHODS

The surveyors sampled one location on each stream surveyed. The crew consisted of three people. One person ran the electrofishing equipment and also assist in netting fish. The second person was a netter and a third person netted fish and also carried a bucket to hold captured fish in. A string line or a tape measure was used to determine the ending point of the 100 M section which was sampled.

Figure 1. Map of the streams surveyed on the Kemmerer District, Bridger-Teton National Forest in 1995.

To determine the upper distribution of fish in a stream the surveyors hiked the stream looking for fish and periodically electrofishing. After fish were found the surveyors continued upstream for aproximately 200M. above the last fish found. The sampling location was located at upper end of where fish were found working downstream. All possible attempts were made to locate sampling sections where a crew, in future years, could relocate and resample the same stream sections. Most of the upper limits were located where two tributaries came together or a migration barrier existed.

The sample sections were approximately 100m in length and started and ended at distinguishable habitat breaks. All side channels were sampled within this length of stream section. Fish collected within the sampling section during each pass were placed in a bucket of fresh water until weight, total length and adapose fin clips could be taken. Crews took fin clips from 30 cutthroat trout when available. I selected the adapose fin because I believed that removal of this fin would be the least damaging to the fish's ability to survive. Fish less than 80mm were not fin clipped because of the small size of the adapose fin. The fin clips were preserved in 95% alcohol. No whole fish were collected during the survey.

Limited channel characteristics were also measured or estimated. These included average depth and width. Bank stability was also estimated for each of the sections. Causal factors for instability were not determined during the survey.

RESULTS

Nine streams were surveyed on the Bridger-Teton National Forest through this effort (Table 1). The dominant fish species found in the streams sampled were cutthroat trout. Some brown and brook trout were also encountered (Table 2).

Giraffe Creek Tributary

The Giraffe Creek tributary sampled is found in Lincoln County, Wyoming and runs south west into Giraffe Creek. The majority of Giraffe Creek's headwaters are found in Bear Lake County, Idaho, and drains south east from the Caribou to the Bridger-Teton National Forest. Sheep graze in the drainage and recreational activities such as hunting and fishing occur. The country side consists of sagebrush, small groves of trees and rocky

bluffs (Photo 1).

Table 2. Streams surveyed on the Bridger-Teton National Forest in 1995 and fish species found in sampling sections.

Stream	Fish species
Giraffe Creek Tributary	CUT
Packstring Creek	CUT
Little White Creek	CUT
Water Canyon Creek	CUT
Porcupine Creek	BKT,CUT,SCU
Trespass Creek	CUT,
Lander Creek	CUT,BRN,SCU
North Fork Lander Creek	CUT
North Fork Smiths Fork	CUT,SCU

CUT=CUTTHROAT TROUT, BKT=BROOK TROUT, BRN=BROWN TROUT, SCU=SCULPIN

The Giraffe Creek tributary section was located just below a spring. A few 1 meter headcuts precluded fish from moving into the spring pond (Photo 2). Water temperature was 56°F at 1:45 in the afternoon 30 August 1995. The section consisted of 100% cutthroat trout with 9 fish being captured during the first pass and no fish being captured during the second pass. Twenty five additional fish were collected below the sampling section to acquire the necessary number of fin clips. Adapose fins were collected from 30 fish. A number of young-of-the-year fish were observed during the survey (Photo 3 and 4 are of fish observed during the survey). The total length of the cutthroat trout captured ranged from 48mm to 265mm and averaged 135mm (5.3in.). Their weight ranged from less than 1g to 189g and averaged 33.8g (1.27oz.). This section of the tributary to Giraffe Creek consisted primarily of age 2 fish and older fish (Figure 1).

Packstring Creek

Packstring Creek is a tributary to Salt Creek. Grazing and recreation activities such as hunting and fishing may occur. Two sample reachs were surveyed on Packstring Creek.

The sample sections were located at where the mouth of the small tributary come into packstring Creek in the southwest corner of Section 22 and goes downstream 100m. An upper section was up the small tributary in section 22. Fish were only found in the lower 1/3 of a mile of this tributary. Additional stream length was sampled to acquire additional tissue samples. Because of the difficulty of sampling and the complexity of the habitat no population estimate was made on the stream and both samples were

combined. Water temperature at the time of electrofishing the

Figure 2. Length frequency of cutthroat trout captured in an unnamed tributary of Graffe Creek, Bear River Drainage, Bridger-Teton National Forest, in 1995.

sections was 49°F on 30 August 1995. The section consisted of 100% cutthroat trout with 8 fish being capured in the mainstem of Packstring Creek and 8 fish being captured outside. Fin clips were collected from 22 fish (Photo 5 is fish 14 captured during the sampling effort.). The total length of the fish captured ranged from 119mm to 211mm and averaged 173mm (4.4in.). The weight ranged from 19g to 124g and averaged 58.7g (2.1oz.). This section of Packstring Creek consisted primarily of age 3 fish (Figure 2). The riparian area was well developed (photo 8). Lack of water and adult holding area appears to be the major constraint for this population.

Little White Creek

Little White Creek is a tributary of Salt Creek and drains to the south. The section surveyed was located where the stream crossed from section 2 into section 11. The upper end was bounded by a natural fall 1.3 meters in height (Photo 6). This was just below a failed beaver dam which had washed out a portion of the west hill side. No fish were found above the falls. The riparian zone consisted of willows and low bursh (Photo 7). Water temperature, at the time of electrofishing the section, was 48°F at 4:00 in the afternoon 22 August 1995. The section consisted of 100% cutthroat trout with seven fish being captured during the first pass and one fish being captured during the second pass. Twelve additional fish were collected below the sampling section in an effort to acquire additional fin clips. Adapose fins were collected from 20 fish. No young-of-the-year fish were observed during the survey. The total length of the cutthroat trout captured ranged from 122mm to 198mm and averaged 173mm (6.8in.). Their weight ranged from less than 19g to 92g and averaged 61.1g (2.2oz.). This section of Little White Creek consisted primarily of age 3 fish (Figure 1).

Water Canyon Creek

Water Canyon Creek is a tributary to Salt Creek. It drains to the west. Cattle grazing and recreational activities such as fishing and hunting in the drainage. Beavers are present in the drainage with a number of dams being present and maintained.

The upper section was located where the two tributaries join together in section 27 (Photo 8 and 9). No fish were found upstream of this point in either triutary. The section went downstream 100m from the point where these two tributaries connect. Water temperature at the time of electrofishing the section was 54°F at about 10:00 in the morning of 22 August 1995. The section consisted of 100% cutthroat trout with seven fish being captured during the first pass and eight fish being captured during the

second pass. Additional fish were captured below the section to

Figure 3. Length frequency of cutthroat trout captured in Packstring Creek, Bear River Drainage, Bridtger-Teton National Forest, in 1995.

Figure 4. Length frequency of cutthroat trout captured in Little White Creek, Bear River Drainage, Bridtger-Teton National Forest, in 1995.

collect addition fin clips (Photo 10). Fin clips were collected from 30 fish. The total length of the fish captured ranged from 28mm to 288mm and averaged 114.7 (4.5in.). The weight ranged from less than a gram to 219g and averaged 29g (1.0oz.). The fish captured in Water Canyon Creek consists primarily of young-of-the-year and age 2 fish (Figure 3).

Porcupine Creek

Porcupine Creek is a tributary to the Smiths Fork. It drains to the south. Porcupine Creek is grazed by sheep throught the drainage. Beaver are found throughout the drainage. No photos were taken this day because the camera was accidently left behind.

The sample section was located at the most upstream portion where water is found in the drainage. This is in the northeast quarter of the south west quarter of section 12, range 118 west, township 28 north. Water temperature at the time of electrofishing the section was 48°F at about 2:00 in the afternoon of 28 August 1995. The section consisted of 2 brook trout. No fish were captured during the second pass. An additional 30 cutthroat were captured downstream from the sample section. In the headwater area the consisted of approximately 50% brook trout and 50% cutthroat trout. The total lengths of the brook trout captured were 154mm and 240mm (Figure 4). They weighed 46 and 201 grams. The total length of the cutthroat trout captured ranged from 77mm and 259mm and averaged 164.2mm (6.5 in., Figure 4). They weighed from 2g to 166g and averaged 61.4g (2.2oz).

Trespass Creek

Trespass Creek is a tributary to the Smiths Fork. It drains to the southwest. Trespass Creek was at the forest boundary with the sample section going downstream 100m (Photo 11 and 12). To reach the sample site the crew hiked up Trail Creek and came down from the top of the drainage looking and electrofishing as they traveled. Fish were first located at the forest boundary. No boundary fence has been constructed between private and Public lands although boundary markers had been installed.

Water temperature at the time of electrofishing the section was 53°F at 12:00 noon on 23 August 1995. The section consisted of only cutthroat trout with 10 fish being caputred during the first pass and 2 fish during the second pass. Twenty one fish were captured downstream outside of the sample reach. The total length of the cutthroat trout captured ranged from 78mm to 249mm and averaged 148.8mm (5.9in., Figure 6, Photo 13). Their weight ranged from 5g to 148g and averaged 42.2g (1.5oz).

Figure 5. Length frequency of cutthroat trout captured in Water Canyon Creek, Bear River Drainage, Bridtger-Teton National Forest, in 1995.

Figure 6. Length frequency of cutthroat trout captured in Porcupine Creek, Bear River Drainage, Bridtger-Teton National Forest, in 1995.

Figure 7. Length frequency of cutthroat trout captured in Trespass Creek, Bear River Drainage, Bridtger-Teton National Forest, in 1995.

Lander Creek

Lander Creek is a tributary to the Smiths Fork. The survey section on Lander Creek is located at the mouth of the North Fork and goes downstream 100m. The crew hiked the upper portion of Lander Creek and found habitat for fish but no cutthroat (Photo 14). Some sculpin were found which may have survived low water years. Beavers are found in the drainage as evidenced by the number of old and new beaver dams. Lander Creek drains to the northwest. Water temperature at the time of electrofishing the section was 41°F at about 9:30 in the morning of 31 August 1995. The section consisted of brown trout and sculpin were also found within the section. The total length of cutthroat trout found in the drainage ranged from 62mm to 220mm and averaged 137.1mm (5.4in, Photos 15 and 16). Their weight ranged from 3g to 95g and averaged 33.8g (1.2oz). The one brown trout collected was 183mm in length and weighed 61 grams.

North Fork Lander Creek

North Fork Lander Creek is a tributary to Lander Creek which flows from a northeast direction. The sample section started at the bottom end of a barrier located in the north west quarter of teh south west quarter of section 20. The barrier is a series of falles which prevents upstream migration of fish (Photos 17, 18). No fish were found upstream of the barrier. Water temperature at the time of shocking was 50°F at 2:30 in the afternoon on 21 August 1995.

Only six cutthroat trout were captured within the 100m section during the first pass (Photos 19, 20, 21). No fish were captured during the second pass. Only one other fish was captured downstream of the section with most othe the downstream portion of the stream being electrofished. For the seven cutthroat, the average length was 152mm and ranged from 136mm to 177mm (Figure 8).

North Fork Smiths Fork

North Fork Smiths Fork is a tributary to the Smiths Fork. The creek drains to the southwest. The sample section was located where the stream crosses from section 6 into section 7. The upper end of the section is where a tributary drains straight from the north into the main North Fork Smiths Fork. The sample reach was 100m in length. Only one cutthroat trout was captured within the reach. No fish were captured during the second pass. Habitat appeared to be available for more fish. Twenty nine additional cutthroat trout were captured below the sample reach. Sculpin were also captured below the sample section.

Figure 8. Length frequency of brook and cutthroat trout captured in Lander and North Fork Lander Creek, Bear River Drainage, Bridtger-Teton National Forest, in 1995.

Figure 9. Length frequency of cutthroat trout captured in North Fork Smiths Fork Creek, Bear River Drainage, Bridtger-Teton National Forest, in 1995.

The cutthroat trout averaged 188mm (7.4in.) in length and ranged from 127mm to 275mm (Figure ***). The fish weighed from 20g to 262g and averaged 87g (3.1oz).

OPPORTUNITIES AND RECOMMENDATIONS

Opportunities mean many different things to different people. In this report, I have viewed opportunities from a fish management perspective. Ecosystem management principles would suggest that we manage for all resources so as to not lose any one part.

Tributary of Giraffe Creek

The opportunity exists in the tributary of Giraffe Creek to install some cobble to prevent additional downcutting up near the spring at the top of the survey reach. The number of young of the year fish and the range of sizes suggests that the population is in good shape. A hearder's camp on the bank of the stream could also be pulled back away from the streams edge to minimize impacts.

Packstring Creek

The main opportunity to improve fish habitat in Packstring Creek install some cobble to prevent additional downcutting up near the upper reaches of the east tributary. Aspen regeneration in the drainage could also help the population by improving water storage in the drainage in beaver dams. There was little evidence that beaver were still in the drainage.

Little White Creek

Little White Creek was being impacted by the number of cut banks which appear to be natural to the area. It may also be deserible to stock fish above the natural barrier in the drainage. Prior to moving fish upstream macroinverebrates and amphibians need to be looked at to preclude impacts from fish stocking.

Water Canyon Creek

The main opportunity to habitat in Water Canyon Creek would be to control sediment input into the stream. In the upper end of the drainage there exists a number of bare soil areas which, during spring runoff, could contribute sediment into the stream. There are also a few downcuts in the stream that could be stabilized.

Porcupine Creek

There is little fish habitat on National Forest Land in this drainage. Livestock/wildlife grazing appears to be impacting water quality and bank stability in the drainage. A reveiw by district staff involved in grazing management is recommended.

Trespass Creek

Opportunities exist to improve fish habitat through restoring riparian vegetation and reducing grazing impacts. Sediment is being contributed off the side slope because of sheep grazing. Much of the vegetation along the stream had been removed and the covered reduced by grazing. Sheep were grazing in the upper end of the drainage during the survey. From a fish management perspective treatment of this drainage to remove exotic species could benefit native cutthroat trout populations.

Lander Creek

Opportunities exist to improve fish habitat through restoring riparian vegetation and reducing grazing impacts. Water temperatures are a problem in the upper reach of Lander Creek. From a fish management perspective the transplant of fish higher in the drainage would strengthen the population. The population is currently so limited in numbers that an external source may be needed for upstream stocking. Exotic species may also need to be removed. The remove of exotic species could also benefit native cutthroat trout populations.

North Fork Lander Creek

The stocking of cutthroat above the migration barrier my benefit the cutthroat trout population. Care should be give to the macroinveretbrates and amphibians to prevent unnecessary loss of species.

North Fork Smiths Fork

The stocking of cutthroat above the migration barrier my benefit the cutthroat trout population. Care should be give to the macroinveretbrates and amphibians to prevent unnecessary loss of species.

Drainage Wide

In this report I have dealt with mainly fish issues or habitat issues which were obvious at a glance. No habitat survey was conducted to identify specific habitat project which could be implemented to improve fish habitat.

Many of these streams are not large are not large enough to make it worth while to conduct fish habitat surveys on. It would be beneficial to conduct a walk through to identify individual location which could be improved.

All fish samples have been taken to Brigham Young University for analysis. Because of limited money no fish samples have been analyzed at this time.

Photo 1. Giraffe Creek tributary uplands. Note Elk on the bluff.

Photo 2. Giraffe Creek tributary survey reach. Photo is looking west through the survey reach.

Photo 3. Giraffe Creek tributary fish. Refer to fish 3 in the data table for Giraffe Creek tributary.

Photo 4. Giraffe Creek tributary fish. Refer to fish 13 in the data table for Giraffe Creek tributary.

Photo 5. Packstring Creek fish. Refer to fish 14 in the data table for Packstring Creek.

Photo 6. Little White Creek Barrier. This drop is approximately 1 meter with no jump pool. See map for general location.

Photo 7. Little White Creek looking south downstream through the section. Mark Brought was one of the survey crew members.

Photo 8. Water Canyon Creek looking upstream at the upper end of the survey reach where two small drainages combine. No fish were found about this point in the stream.

Photo 9. Water Canyon Creek looking west down through the section surveyed.

Photo 10. Water Canyon Creek fish. Refer to fish 22 in the data table for Water Canyon Creek.

Photo 11. Trespass Creek looking upstream where the two major tributaries combine to form fish inhabitated waters. No fish were found in either tributary above this point. This location forms the upper limit of the survey reach.

Photo 12. Trespass Creek looking southwest through the survey reach. The water appears cloudy because of survey work. Note the section boundary marker on the tree. This is at the forest boundary marker.

Photo 13. Trespass Creek fish. Refer to fish number 32 in the Trespass Creek data sheet.

Photo 14. Lander Creek survey reach. Note the trail on the hill side.

Photo 15. Lander Creek fish. Refer to fish 1 on the data table for Lander Creek.

Photo 16. Lander Creek fish. Refer to fish 13 on the data table for Lander Creek.

Photo 17. Barrier on North Fork Lander Creek. Jackie Wiese and Mark Brough were the crew members assisting in the survey work. Photo is looking to the northeast.

Photo 18. Survey reach in North Fork Lander Creek, looking southwest.

Photo 19-21. North Fork Lander Creek fish.

Photo 22. North Fork Smiths Fork barrier. Photo is looking to the north. No fish were capture or seen above this point.

Photo 23. Survey reach on North Fork Smiths Fork starting at the barrier in Photo 22 and going downstream 100 meters.

Photo 24. North Fork Smiths Fork fish. Refer to fish number 2 in data sheet for North Fork Smiths Fork.